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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,107	12/09/2005	Igor Lubomirsky	LUBOMIRSKY=1	2902
1444 7590 01/05/2010 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			EXAMINER NGUYEN, KHANH TUAN	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 01/05/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,107	Applicant(s) LUBOMIRSKY, IGOR	
	Examiner KHANH T. NGUYEN	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 24-41 is/are pending in the application.
- 4a) Of the above claim(s) 2,3 and 38-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-20,24-37 and 41 is/are rejected.
- 7) ☒ Claim(s) 24, 29, 30, 36 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>n/a</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Final

Response to Amendment

1. The amendment filed on 11/20/2009 is entered and acknowledged by the Examiner. Claims 1-20 and 24-41 are pending in the instant application. Claims 2-3 and 38-40 withdrawn from further consideration.
2. Claim 24 is rejoined in view Applicant's amendment to direct the instant claim to the elected subject matter. Claims 21-23 have been canceled. Claims 1, 4-20, 24-37, and 41 are currently under examination.
3. This application contains claims 2-3 and 38-40 are drawn to an invention nonelected with traverse in the reply filed on 08/11/2008. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.
4. The art rejection of claims 1, 4-20, 24-37 and 41 are rendered moot in view of the above amendment.

Specification

5. The disclosure is objected to because of the following informalities: At page 8, line 25, of the present specification

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the, the phase "electric filed" should be replace with -electric field-. Appropriate correction is required.

Claim Objections

6. Claim 24 is objected to because of the following informalities: the instant claim contains two periods at the end. Appropriate correction is required.

7. Applicant is advised that should claims 29 and 30 be found allowable, claims 36 and 37 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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9. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US Pat. 4,067,056 (hereinafter refer to as Taylor).

Taylor discloses an apparatus and method for continuously poling a pyroelectric and/or piezoelectric film (Title and Abstract. The film can include ceramic material (Col. 4, line 37). The method of poling is construed as mechanical strain. The poled pyroelectric ceramic material inherent lack spatial periodicity as claimed.

The reference specifically or inherently meets each of the claimed limitations. The reference is anticipatory.

Claim Rejections - 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. *The amendment to claims 1 and 24 have been acknowledged and considered. The method step, i.e. mechanical strain being controlled so as to prevent crystallization of said compound, recited in the instant product claim is considered a positive limitation.*

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12. *The examiner further noted that the term "mechanical strain" includes method such as applying an electric field and temperature gradient (See specification page 8 lines 13-25).*

13. Claims 1, 4-20, 24-37 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pub. 2003/0033700 A1 (Takeuchi) in view of either US Pat. 5,483,842 (hereinafter refer to as Foreman) or US Pat. 6,048,622 (hereinafter refer to as Hagood).

Takeuchi teaches an inorganic oxide material having a piezoelectric and electrostrictive properties that is useful for forming a film on ceramic substrate (Abstract; [0093]) as recited in claims 25-26. The ceramic substrate is readable on the conventional substrate recited in claim 27. Takeuchi teaches a piezoelectric material forming a layer with a thickness of not more than around 3-40 microns [0115]. The lower limit of not more than around 3 microns thick is readable on the claim thickness of below 0.5 microns as recited in claim 28. The piezoelectric material can be in an amorphous form, i.e. non-crystalline solid [0093]. The piezoelectric material can be polarized by a polarization treatment [0093] as recited in claim 41. Takeuchi teaches the piezoelectric material composed of the ingredients such as alkali metals, alkali earth metals,

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rare earth metals, and elements of Group IVA as recited in claims 4-13 [0095-0096; and 0098], thus the piezoelectric material of Takeuchi is considered to include the compound having the formulas as recited in claims 4, 14, 17, 19-20, and 24 where A or B is selected from element of Group IVA such as lead (Pb). Takeuchi teaches the proportion of the piezoelectric material may be adjusted [0094]. Takeuchi further teaches the piezoelectric material can be used in devices such as sensor, sound-emitting device (i.e. acoustic wave propagation element) as recited in claims 29-33 and 36-37 [0135].

The difference between Takeuchi and the instant application is that Takeuchi failed to suggest a step of providing mechanical strain to said piezoelectric material to prevent crystallization as recited in claims 1 and 24.

However, Foreman discloses a sensor material comprising of piezoceramic material such as barium titanate or lead zirconate titanate that can be heated to an elevated temperature and subsequently cooled while in the presence of a strong direct current electric field (i.e. mechanical strain) to polarize the material by aligning the molecular dipoles of ceramic material in the direction of the applied current, thus providing it with piezoelectric properties (Col. 1, lines 14-45).

Hagood discloses a monolithic piezoelectric material used in structural control as actuators or sensors (Col. 1, lines 52-53). The piezoelectric material can be ceramic or ferroelectric material that is subjected to poling by electrical field (i.e. mechanical strain) to cause the dipoles to become aligned and exhibit piezoelectric effects (Col. 1, lines 44-50).

Thus, it would have been obvious to a skilled artisan at the time the invention was made to subject the material of Takeuchi to a mechanical strain such as electrical field as described by either Foreman or Hagood in order to align the dipoles along the direction of the current and provide piezoelectric property to the material for utility in actuator and sensor as suggested by Foreman and Hagood. The treated material is expected to have a lack of spatial periodicity since the prior art discloses a similar compound subjected to a similar method as recited in claims 1 and 24.

Response to Arguments

14. Applicant's arguments with respect to claims above have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 7:00-4:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the

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organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/
Primary Examiner, Art Unit
1796

/KTN/
Examiner
12/28/2009